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# A usability study and testing of the Qtip.me website

Pichugin, Dmitrii

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## A usability study and testing of the Qtip.me website

Pichugin Dmitrii  
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Pichugin, Dmitrii

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This bachelor's thesis describes and analyses usability tests done for Codemenders Oy, a software development company. The main objective was to evaluate the current user interface design of Qtip.me website from the usability point of view and suggest possible improvements. The study identified potential weaknesses and gathered feedback from real users, who volunteered to participate in a think-aloud test.

The theoretical section of the thesis defines research concepts and gives an overview of the existing theory of UCD, UX and usability testing methods, where UCD was chosen as a framework. The document provides definitions of different approaches to usability, explains the importance of applying its principles during website development and presents both the strong and weak points of the two chosen usability evaluation techniques.

After the UI requirements were gathered and a target user profile was designed, the empirical part of the project was conducted. The usability testing consisted of heuristic evaluation followed by think-aloud tests, and ten volunteers participated in the system evaluation by giving feedback and providing answers to a set of questionnaires.

The findings of the research were analysed and the problems found were given severity ratings. Based on the collected data two user interface prototypes were developed and presented to the customer company. The objective suggestions given in this paper can be used for future development of the website.

Keywords      UX, usability, UCD, heuristic evaluation, think-aloud, user interface design, website user satisfaction

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## 1 Introduction

This thesis describes and analyses the usability test research of a website Qtip.me done for a company Codemenders Oy. In this chapter, the research problem is introduced, as well as the specific case this paper addresses is explained. Then a research question is proposed, the answer to which contributes knowledge helping to make improvements to the project and benefit the client company. Based on this question, the main purpose of this study is presented and the chosen research approach is justified. The chapter is concluded by presenting thesis's scope and limitations.

Usability is always an issue on which most of the developers work on, while contributing to a user-oriented IT project. User experience is becoming a key term in the world of interactive product design. With the increase of offers in the software market, customers hope to see user interfaces of higher quality, easy to understand and handle. While the methodologies used to devise optimal UIs develop, companies and countries are ready to invest much money, time, and effort in enhancing user experience to attract users to their software solutions (Gartner 2014).

User experience relies on a concern of problems the user faces and tries to solve. Thus it cannot be improved without understanding and predicting user behaviour. Possible errors in user interface design need to be found during a testing stage and corrected, since miscalculations made in the early stages of development can be costly to revise later. This is true both for small and big projects (Mitrović & Mena 2003, 273-287).

This paper reviews the front-end office website part of Qtip.me service provided by Codemenders Oy from the point of view of user-centered design. The upcoming launch of a website for corporate clients' use and interest of a company towards making a user-centered designed service played the decisive role for choosing this topic as the research idea.

### 1.1 Objectives

The thesis is motivated with the main research question being to define how the current design of the website correlates with user-centered design principles. This research question can be broken down to the following questions:

1. What is the current state of usability of the website?
2. Are users satisfied with its design?
3. What kind of improvements and developments would potential users like to see?

Based on the research question stated above, the main purpose of the study done for the company was to evaluate the user interface design of a website for corporate use and suggest improvement ideas for development to make it more intuitive and user-friendly.

User-centered design was chosen to be the research and development approach applied during this project as Codemenders Oy were interested in developing a product from a customer point of view in order to increase employee efficiency and comfort, when using their software solution. UCD can be described as a multi-stage problem solving process, where designers attempt to foresee how users are likely to use and perceive a product, at the same time allowing to test these assumptions. A UI built according to the rules of UCD can lead to increased customer satisfaction, along with increased ease of using the system and reduced number of errors. Additionally, being iterative by its nature user-centered design shares many common principles with agile development methods applied in the company (Haikara 2007, 153-156).

An exploratory research was done in order to identify pros and cons of the current UI in regards to user experience and discover possible improvements. Both quantitative and qualitative research methods were applied during, with the priority given to the qualitative ones. These methods included surveys, interviews, cognitive walkthrough, think-aloud method and heuristic evaluation. They belong to the ones Jakob Nielsen, an inventor of discount usability engineering approach, recommends in his book “Prioritizing Web Usability” (Loranger & Nielsen 2006). Data from usability testing arranged as a part of this project was used to present suggestions and provide two prototypes of a better user interface.

The practical part of usability testing was done by putting several of the intended users of a site at the center of its design and the testing itself was conducted from November 2014 to March 2015. Since the corporate website has not been released at the time of the research, the purpose of the usability testing was to evaluate the current design solution, determine user satisfaction with the website, identify usability problems and suggest improvements.

## 1.2 Project background

Qtip.me is a service provided by Codemenders Oy that offers its customers to secure a place in a queue distantly via a mobile phone. It also allows small and medium companies to both get an overview of their queueing situation and manage all their customer queues online. Its goal is to let users utilize the waiting time, avoid physically standing in queues and come exactly when it is their turn to be served by taking remote tickets to visit any office they want. While common users have an application installed on their phones, where they can see a list of offices nearby, current queue situation and take a remote ticket they are reserving places

in a queue at, company personnel have access to website monitoring, where queues can be observed and customer flow managed.

Usage of Qtip.me is not limited only to office spaces: this solution can be applied anywhere, where queues happen to appear, e.g. grocery stores, taxi queues, etc. The service supports NFC and QR technologies in order to help users take a place in a queue or leave feedback easily. Web frontend of Qtip.me designed for corporate use ensures easy customer flow and has many useful features including receiving immediate feedback.

### 1.3 Scope and limitations

This thesis focuses on organizing the usability testing and analysis of its results for Qtip.me project aiming to improve user experience of corporate users dealing with the office part of the service. Usability testing conducted included only testing the interface for corporate use and did not include the mobile one for personal use. The purpose of the usability test done for Codemenders Oy was to determine the extent an interface facilitates a user's ability to complete routine tasks, gather initial customers' feedback and make suggestions on how to make it better from the point of view of user-centered design approach.

## 2 User-centered design and common approaches to usability

### 2.1 Differences between UCD, UX and usability

User-centered design (UCD) is a design philosophy and process in which great attention is given to the needs, expectations, and limitations of the end user of a human-computer interface at each stage of the design process, thus instilling customer loyalty and satisfaction. During this process designers not only analyse and foresee how users are likely to use an interface, but also test their assumptions with actual users under real usage scenario (Dong & Li 2008).

UCD implies paying much attention to all aspects of user's interaction with a product, which are together called user experience (UX), and is aimed to provide the best UX possible. UX relates to the perception of using a product. It focuses on users' needs, their abilities, limitations and interests. There are many definitions of UX: for example, Keinonen and Jääskö define UX as the user's overall relationship with the product and the service it provides (Keinonen & Jääskö 2004), while Battarbee describes UX as a comprehensive concept, which includes the user, the product and context of use (Battarbee 2004).

UX is closely connected with usability: according to the ISO standard 9241-11 on ergonomics of human-computer interaction usability is "the extent to which a product can be used by

specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use". It can be applied to anything designed for people. However, usability is a narrower concept than UX, which can include such aspects as human factors, design, ergonomics, HCI, accessibility and marketing. Usability tests of websites are evaluations on whether the purpose of the website comes across and is clear to perform through the functionality of the site (ISO 1998).

UX can be tested to see which design solutions were effective and which were not. Heim defines the usability test as a pre-defined structured process that is used to explore the interaction between an objective participant and a proposed or ready design. As a rule, the test focuses on particular points and leads to identification and understanding of areas that may cause problems during interaction with a specific system, website or application. At the same time, the test can reveal new and previously unconsidered issues (Heim 2008, 277).

User interface, or UI, means the space where interactions between a user and a computer occur: a good, satisfying UI allows its user to control software or hardware in an intuitive way and solve tasks efficiently - such interface and experience the user receives throughout the process of using it can be called user-friendly. Working with a well thought-out UI can give its user significant and sustainable competitive advantages saving his or her time and decreasing a chance of making random mistakes, at the same time reducing development and support costs for a company maintaining the product. (Lai-Chong Law, Roto, Hassenzahl, Vermeeren & Kort 2009, 719-728)

UCD operates with many terms of psychology including so called "gestalt laws" describing human perception of random data. They are needed to be taken into account during design in order to predict user's behavior and build more naturally understandable interfaces. When UIs are evaluated or tested with real users, attention must be paid how gestalt principles are applied to find out reasons for potential usability problems and to produce improvement ideas (Bevan 2001, 533-552).

## 2.2 Nielsen approach

Jakob Nielsen, a web-usability consultant, author of many books and scientific articles on UX and usability, stated three main usability engineering techniques: early focus on users and tasks, empirical measurement, and iterative design. He also was the first to suggest analyzing usability by separating it into the study of learnability, efficiency, memorability, errors and satisfaction of the given system.



In his book “Usability Engineering” Nielsen describes his ideas about usability and how to test it. The cost-effective approach of usability testing suggested by Nielsen is widely used and allows to evaluate the current level of usability and improve it. Scenarios, simplified think-aloud, and heuristic evaluation methods are used to predict how the user may act in each particular case. It involves iterative refinement of the product, so that its development continues gradually and never stops (Nielsen 1994, 115-148).

### 2.3 Sanders approach

There are slight differences between approaches of other experts in usability. Aaron Sanders, a specialist in UCD approach and agile methods, shares similar views to developing products that allow to provide better UX with Nielsen. According to him, UX design process should come first to define users’ needs and see how they can be achieved in consideration with business, creative or other internal goals, then by assembling a visual design and presentation layer UI is built. At this stage, application designers focus on the “treatment of graphics and text, interface and page elements, and navigational components.” The actual development of back-end processes comes only after this (Sanders 2014).

Sanders also pays much attention to the fact that human experience is a personal activity and therefore user experience can be different in every separate case. Thus it is important to know the potential users’ backgrounds in order to understand what one’s desirable experience and future behaviour may be (Marcus 2011, 29-30).

### 2.4 Krug approach

Steve Krug is another usability expert, who wrote many books on this subject. While Krug agrees with Nielsen on many points, in his book “Don’t make me think” he presents his view on applying usability concepts to creating websites. Krug’s approach simplifies the view on usability as a science described by Nielsen. Krug sees usability as a tool, which is essential to use (Krug 2013).

He describes three main laws of usability, the first of which is to create simpler interface in order to avoid confusion among users. He explains what kind of behavior can be expected from the user and what his or her user experience should be: in order for a website to be effective, it should be possible to decipher it at a glance and read through it quickly (Krug 2013, 10-17).

The second law states that the number of clicks a user makes does not matter as long as every choice is unambiguous and does not take much effort. In other words, it is fine to let

the user experiment and go around the website, but the important thing is to make sure the user does not get a feeling of getting lost.

The third rule described in that book says that one should consider removing half of the amount of words and then return and remove half of the words again. This leads to removal of less meaningful text making the user experience more relevant and consistent. Krug further explains his approach of usability testing methods in the book “Rocket Surgery Made Easy” (Krug 2010, 56-78).

### 3 UI requirements, target user profile

A large amount of software is created for corporate use. Whether it is developed by an independent company or under the care of a consultant, in some cases not enough time, effort, or money is invested into creating a good UI to suit the users’ needs. With the amount of software being created, not all products have good UIs that the end user truly likes and is instantly comfortable using. However, a software application or a website must be as easy to navigate and use as possible. This is especially important for Qtip.me project, whose target users are office workers, not necessarily familiar with queue management system software.

According to the words of Codemender’s co-founder Aseem Shakuntal, the interface of a Qtip.me website should have everything to add, edit or delete queues quickly, see information where to expect incoming visitors, be concise and clear, as well as use certain colours to make common actions predictable and decrease a chance of making a mistake. The logics behind UI elements should be consistent and reduce the training necessary. The main goal was to introduce a system to manage the queue situation efficiently and thus fulfill the customer company’s needs.

In order to achieve the desired results and get a better understanding of the target users’ expectations, a list of companies willing to potentially use Qtip.me solution in the future was made. They mainly included banks, transport companies and stores. Based on combination of this raw data, three interviews with employees of the companies from the list were organized. While the main question asked during these interviews was what the customers’ desires, expectations and limitations were, the supplementary goal was to gain information about employees, who would interact with the product.

Based on the acquired raw data and educated guess, target user persona was created to represent potential users of the service and predict their behavior. This persona was used to guide decisions about a service such as features, interactions and visual design of a website.

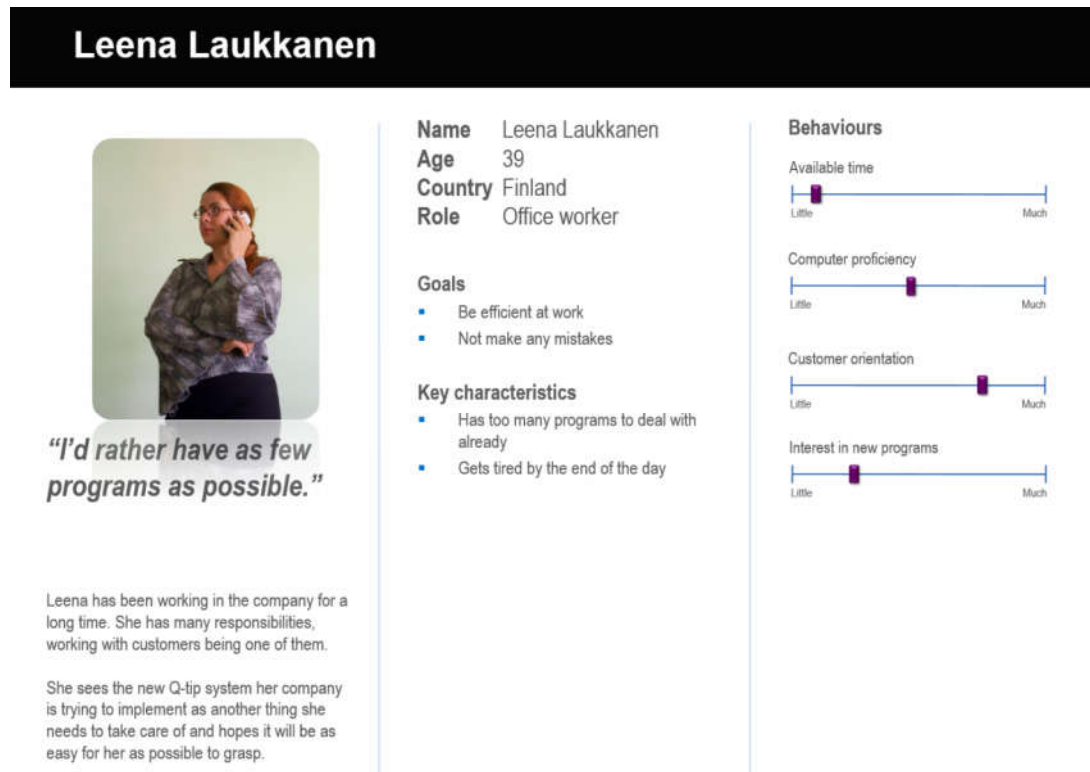


Figure 1: User persona

#### 4 Usability testing

Usability testing done for Qtip.me was divided into two parts: heuristic evaluation of the current version of the website for corporate clients was implemented by one evaluator, while the following usability testing involved 10 participants doing tasks applying think-aloud method and subsequent analysis of their surveys and tasks completion.

##### 4.1 Heuristic evaluation test

Heuristic evaluation is a form of usability inspection where an expert judges whether each element of a user interface follows a list of established usability heuristics.

Heuristic evaluation can be applied in the early stages of design and is often done prior to user testing in order to reduce the number and severity of design errors discovered by users. Since heuristic evaluation can be done by one person, the main benefit of heuristic evaluation is that it does not require multiple users, place to test them or payment for their time. The weak point of this method, however, is that the results are highly influenced by the knowledge of the expert reviewer and thus can vary depending on who does the test (Stickel, Ebner & Holzinger 2010, 278-290).

#### 4.1.1 Methodology and objectives

The heuristic evaluation done for Qtip.me focused on the main functions of the website, which included working with multiple queues, adding and removing queue tickets, finding statistics and billing information. The objective of heuristic evaluation test was to detect potential usability drawbacks and problematic elements of the website. The data received from heuristic evaluation test was used to create tasks for the following stage of usability testing that involved multiple participants.

During the evaluation session the evaluator examined the website and judged its compliance with a list of usability principles and severity ratings proposed by Jakob Nielsen (Nielsen 1995). He went through all the pages of the version of the website for corporate use to identify possible problematic areas. The problems revealed were compared to the heuristic usability principles from the list and assigned severity ratings according to their estimated impact on user performance or acceptance.

Nielsen's heuristic principles are one of the most used heuristics for user-centered design. They were developed by Nielsen and Molich and even though they contain the generalizing word "system", they can be applied to any digital interface whether it is a system, application, web application or a website. The principles include the following:

1. Visibility of current status:

Users should always be informed about what is happening, through appropriate feedback from the system.

2. Clarity:

The system should speak the user's language, so that the user could understand everything easily.

3. User control and freedom:

There should be a way to undo and redo certain actions, quit fast in case of an emergency. Users should be allowed to do the necessary tasks, but not allowed to do harm.

4. Consistency:

The meaning of the elements should be clear and consistent. Users should not need to wonder what certain element does. Platform conventions are to be followed.

5. Error prevention:

Eliminate errors automatically, when possible by check on conditions and presenting users with a confirmation option.

6. Minimization of load on the user's memory:

Possible options should be visible. The user should not have to remember something seen before in order to make decision.

7. Flexibility:

Allow users to automate routine actions or customize notifications they want to see.

8. Aesthetic and minimalist design:

Dialogues should contain only relative information and be concise.

9. Clear error messages:

Error messages should be expressed in plain language, precisely indicate the problem, and suggest a solution.

10. Help and documentation:

Instructions for use of the system should be visible and easily obtainable. (Nielsen & Molich 1990, 249-256)

According to Nielsen, the severity of a usability problem is a combination of three factors: frequency, impact and persistence. The following 0 to 4 scale was used to rate problems during the test:

Severity ratings	
Rank	Description
0	No problem
1	Cosmetic problem: can be left unchanged unless there is extra time available to work on the project
2	Minor usability problem: low priority to fix this
3	Major usability problem: high priority to fix this
4	Usability catastrophe: must be fixed before product is released

Table 1: Severity ratings

#### 4.1.2 Findings

The heuristic evaluation revealed a number of problems that needed to be fixed. Seven problematic areas were identified. Based on these findings the tasks for the next UX test using multiple users and think-aloud method were developed. The main problems identified during heuristic evaluation are presented in the table below together with comments referring to the violated usability principles. Chapter 5 provides more detailed descriptions of these problems combined with the ones found in the following test.

Usability problems found during heuristic evaluation			
Nr	Problem	Severity	Heuristic principles violated
1	'Serve queue', as the main button should be on the right side and be shown at all times in the main window	4	Visibility of current status, Consistency, Minimization of load on the user's memory
2	Error messages are written using many technical terms and codes	3	Error prevention, Clear error messages, Help and documentation
3	User is not informed why an action of deleting queue cannot be completed	3	Clarity, User control and freedom, Error prevention, Aesthetic and minimalist design, Clear error messages
4	No 'Undo' function for managing queues	3	Minimize load on the user's memory, User control and freedom
5	'Help' button is missing on multiple pages in the Billing section	2	Consistency, Help and documentation
6	Difference between Actions and Manage is hard to tell, the buttons have similar functions	2	Clarity, Consistency
7	Colour scheme of various elements is not consistent	2	Consistency, Aesthetic and minimalist design

Table 2: Usability problems found during heuristic evaluation

The following conclusions were made in regards to the website's compliance to the ten aforementioned heuristic principles:

1. Visibility of current status was provided on pages when working with queues, but 'Serve queue' button was not always available and simply disappeared in certain situations. Not enough information about a queue was shown, when a user worked with another queue, which forced the user to switch from one queue to another to see the more detailed status.
2. Clarity was not achieved very well, as the users were not informed in a clear way why they could not delete a queue, receiving an error message filled with technical details. The meaning of many icons on the website was not obvious and required description. Also, it was difficult to grasp the difference between 'Actions' and 'Manage' buttons, as they led to similar options. The language patterns chosen for the website looked too informal in some cases, e.g. in the Billing section, while usually

being rather formal and technical. However, it must be said that the website was simple enough and using its main functions was still possible.

3. The website provided good level of user control and freedom. There were many advanced options, but the user did not have direct access to the backend of the website. It was easy enough to navigate between the main pages. Confirmations for important actions were implemented and worked. Despite all of this, there were no Undo and Redo buttons, which can be seen as a potential drawback.
4. The website lacked consistency in general and this was probably the biggest issue. Some elements were redundant and served the same purpose, e.g. 'Dashboard' button. Others were completely missing on some pages, e.g. 'Help' button in Billing section. The size of buttons varied and buttons in the main window were not centered. Pages did not follow any specific structure.
5. Error prevention was paid much attention. There were confirmation dialogues and the chosen colour scheme contributed to reduce user errors.
6. Much work could be done to minimize load on the user's memory. Navigation to certain areas of the website, such as time settings, was implemented in a not obvious way. There was no 'sitemap' feature.
7. There was no settings to customize notifications the user preferred to see, which meant that flexibility was not optimal either. Logging in was impossible with hitting Enter on the keyboard.
8. The colour scheme was appropriate and the design of the website was good in general. Pages had elegant icons, which served information purposes. The only identified problem was inconsistency of using colours for certain elements.
9. Error messages were not clear enough. It was likely due to the fact that the website was tested at the early stage and there was not enough time to add user-friendly description for possible errors. However, the error messages that were present were not sufficient and did not provide the user with any suggestions of what he or she should do to solve the problem.
10. While there were help and instructions on the main pages, they were non-existent on pages in the billing section. There was not enough help and documentation for advanced mode of working with queues and there was no Instructions or FAQ page created.

## 4.2 Think-aloud test

### 4.2.1 Methodology and objectives

The second method used for UX optimization of Qtip.me website was think-aloud method. During this test participants are asked to use the system, while continuously think out loud, thus providing feedback by verbalizing their thoughts as they move through the interface.

This way problems can be indicated, which in its turn can lead to the future improvement of the website. The test can be divided into three main phases:

1. Preparation phase - recruiting test participants and preparing tasks
2. Execution phase - giving them tasks to perform and observing
3. Analysis phase - analyzing the data gathered

This method is the predominant method in usability testing and offers many advantages (Nielsen, Clemmensen, & Yssing 2002, 101-110). It does not require special equipment and can be done without spending much money. Being a qualitative method, this approach can provide rich data, expose elements causing confusion and show how users work around problems they face. This technique can reveal clues of how people feel, when using the system, which is very important for UX design. Think-aloud method is very flexible. It can be used at any stage of the development cycle and is especially efficient in case of agile development. It can be applied to measure UX using any kind of technology, convincingly demonstrate usability problems to developers and make them change their product to suit customer's needs (Nielsen 1994).

Some weaknesses of this method include participants being too subjective and their theories being given too much importance. This issue can be partially solved by involving a larger number of people. According to Lewis and Virzi, who published works on optimal sample sizes for different usability tests, the first five participants should find 80% of usability problems, while ten users would find closer to 95% of the problems. However, more participants would likely give decreasing levels of return (Lewis 1994, 368-378, Virzi 1992, 457-468). Some participants may find difficulties to think-aloud, while working on a demanding task and this may cause their verbalizations become very brief and fragmented (Branch 2001, 107-122).

The main objective of think-aloud test was to evaluate the current UX design of the website, find UX solutions that users may dislike or have difficulties interacting with and suggest improvements. Another objective of the test was to further study the problems found during the heuristic evaluation and see how they affect user experience with the website.

#### 4.2.2 Test design

The test administrator contacted and recruited volunteers to act as test users. The participants were picked from different age and social groups in order to provide the fullest possible coverage of the problems users may face. There were people both of Finnish and foreign origin. Of the ten participants, six were female and four were male. All of them were familiar with working in an office environment.



Test sessions were conducted throughout three months, each session was individual and was arranged with consideration of participant's wishes in regards to time and place. Six tests were done remotely using Skype, four other test sessions took place in Laurea computer lab. When doing tasks, users were not limited in time and test sessions lasted from 30 to 50 minutes.

Before the test started, each of the volunteers was introduced to Codemenders Oy company background and the main website of Qtip.me, so that testers understood how and where the service offered by the website would be used. Also, they were given pre-task introduction, during which the test administrator explained the test session objectives, the basic procedure of think-aloud test and asked the participants to sign a participant consent form (Appendix 1). The participants also filled in a questionnaire to provide basic information about themselves (Appendix 2).

The users were given a sheet of paper with a set of tasks that involved interacting with the website and needed to be completed. They were asked to talk and explain what they were doing and why. While test participants were supposed to work independently to resemble a real working situation, they could ask for help from the system administrator in case they would not be able to complete a task. This was allowed to make people comfortable and encourage them to talk aloud no matter what happens. Furthermore, everybody was told that it was the website that was being tested and not individuals themselves.

All test sessions were recorded and later analysed to identify potential areas for improvement to the website. To capture the participants' facial expressions, comments, navigation choices and task completion process in general Morae software was used. This software is developed by TechSmith company to do usability, product design, hardware and prototype testing and is meant to help in identifying site and application design problems. The test administrator observed the participants and took notes on how they proceeded through the tasks. No interruptions occurred during the tests.

After the test was over, the test administrator made a post-test interview and asked the participants to rate their experience with the website by answering ten agree-disagree questions using a five-point System Usability Scale (SUS, Strongly Disagree to Strongly Agree) for the following ten subjective measures:

- Ease of use - how difficult it was to complete the tasks using the website
- Frequency of facing similar problems - how often the same problems occurred
- Ease of keeping track of location in the website - how difficult it was to navigate through the website
- Learnability - how easy it was to learn to use the system

- Information facilitation - how quickly the participant could find information
  - Look & feel appeal - how appealing the content on the main page was and if it encouraged to explore the site further
  - Site content in general
  - Site structure
- (U.S. Department of Health & Human Services)

Users were also asked to provide answers to 15 open questions from the overall usability test completion questionnaire (Appendix 3) and give their improvement suggestions. This questionnaire was initially based on the usability test demo Steve Krug provided in his book “Rocket Surgery Made Easy” and developed further by adding extra questions (Krug 2010).

#### 4.2.3 Evaluation tasks

In order to make a usability test effective, it is essential to choose relevant tasks and present them in an understandable way. This was why evaluation tasks for think-aloud test were based on the results of the previous usability test, heuristic evaluation. They presented a combination of the most likely actions to be performed during the working day using the website, which was managing queues and working with billing.

The tasks were designed in a way that a failure to do a task would allow to proceed to the next task without any problems. Test participants attempted completion of the following fifteen tasks that were split into three groups:

##### 1. Queue basic mode

- 1.1. Set a window name to "Desk 1" to let customers know where to come
- 1.2. Add a queue called "Consulting services"
- 1.3. Activate the queue you created
- 1.4. Close the queue for new tickets
- 1.5. Change the description of the queue to "Help with organizational issues"
- 1.6. Modify the view of the site to display "Last ticket dispensed" counter
- 1.7. Refresh the queue list
- 1.8. Press "Serve queue" button of "Consulting services" queue, then go back to the dashboard

##### 2. Billing and settings

- 2.1. Find the information about your company's billing and plan details for current month using the website (using small arrow on top-right of the window)
- 2.2. Find daily usage data of the site and tickets

- 2.3. Go to "Update timings" in your account options and set the office to be opened on Saturday from 10:00 till 15:30
- 2.4. Go back to the main page, close and delete "Consulting services" queue
3. Queue advanced mode
  - 3.1. Create another queue called "Applications" using the advanced mode and requiring message, SSN and name to be stated, then activate it
  - 3.2. Close the "Applications" queue for serving
  - 3.3. Right-click on the Morae Recorder in the task bar and click "Stop", complete the survey and save the video session to D:\Temp\Yourname.rdg

The participants completed all of the tasks assigned to them with different speed and success rate. The results are analysed in the next chapter.

## 5 Results

### 5.1 Errors and analysis

The test facilitator took notes during the think-aloud test and captured the number of errors participants made while trying to complete the tasks. Most of the mistakes were non-critical and did not prevent successful completion of the scenario (Table 4).

Testers made the most mistakes doing tasks 10 and 11, where they were asked to find daily usage data of the tickets served using the website and then go to "Update timings" section in the account options and set the office to be opened on Saturday from 10:00 till 15:30. Most of the users had trouble finding the small button for daily usage data, which happened to be in a Current month's usage section of billing page: people saw it quite illogical to be placed there. Billing page was difficult to navigate and many of the volunteers did not think of a small downward arrow in the top right corner as something leading to billing or account settings page. 'Help' button was missing on all pages in Billing section, which was inconsistent and caused confusion. Other inconsistencies included sometimes using 'Total tickets' and in some cases just 'Tickets', making important buttons responsible for showing detailed ticket information too small, spelling and grammar mistakes, as well as using informal expressions (Appendix 4).

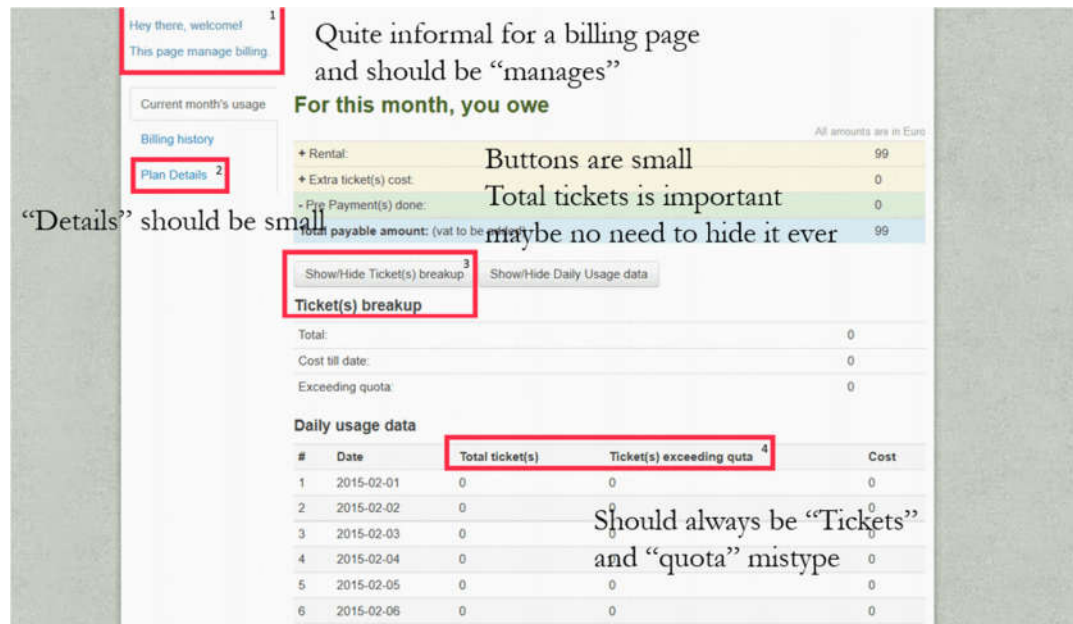


Figure 2: Billing page

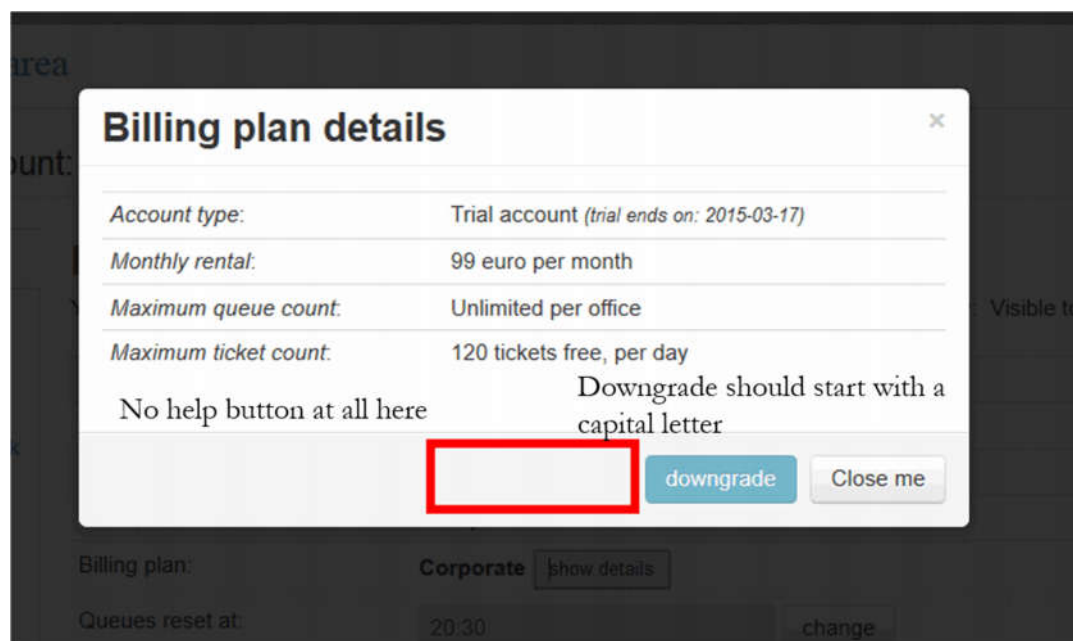


Figure 3: Billing plan details window

As for the update timings task, the majority of the users did not click open/close button after they changed times, because they thought it would open the day for work automatically. These issues were connected with heuristic principles of clarity, error prevention, user control and freedom, which were not followed in that version of the website.

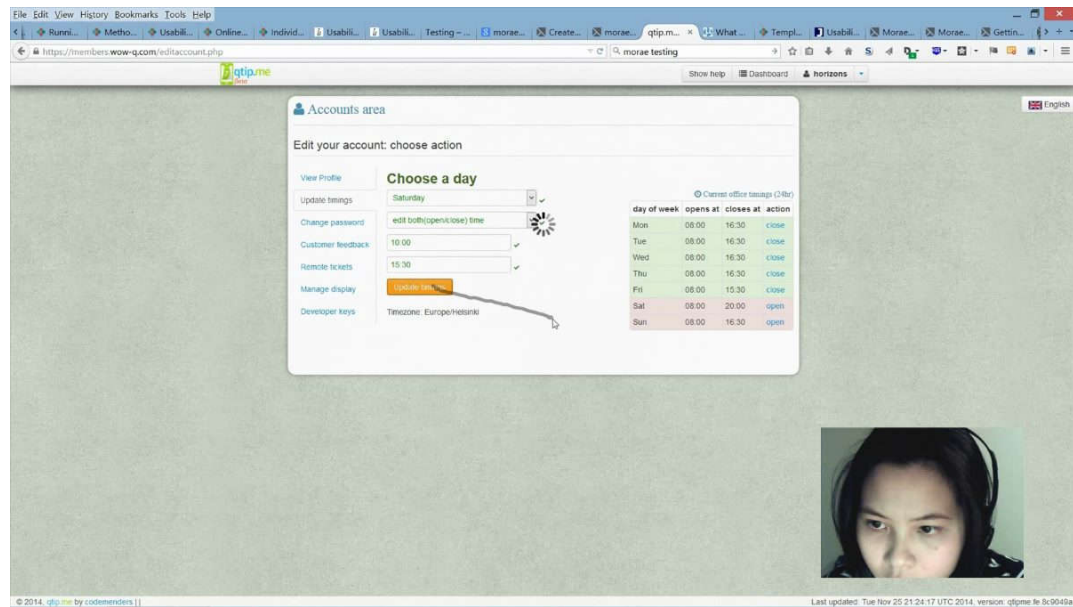


Figure 4: User having troubles with changing time settings

Only a half of the respondents managed to complete task 4, where they needed to temporarily close the queue for serving new tickets, successfully: half of the users closed the queue completely instead. The reason for this is that while working on this task, the test participants had trouble understanding a difference between 'Actions' and 'Manage' buttons and nobody used the info button to read more detailed instructions and get help from the system. Later the users could not remember which options were under 'Actions' and which were under 'Manage' buttons. Also, most users did not like that the main 'Serve queue' button was on the left, when they would like to see it on the right. Thus, the position of the elements on the page violated several heuristic principles, including consistency, visibility of current status and minimization of load on user's memory.

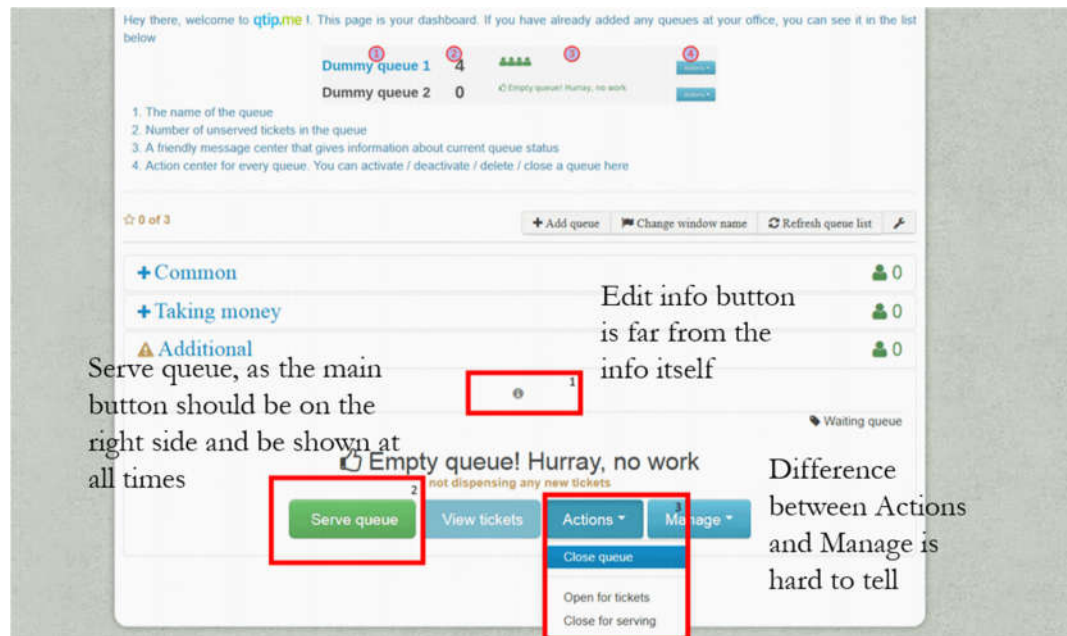


Figure 5: Main queue management window

Everybody successfully completed task 3 and activated the queue after creating it. Adding a queue (task 2 and 13), changing its description (task 5) and refreshing the queue list (task 7) appeared to be easy for most of the participants as well despite the fact that there were usability problems present on the pages the users worked with. After the test was over, some of the test participants identified those problems and suggested that they would be fixed.

Looking at Figure 6 one can see that there are icons serving no purpose, which can distract users, redundant buttons such as 'Dashboard' and 'Show queue list', which lead to the same result, uncentered elements and questionable colour choice for some of them. These points violate heuristic principles of error prevention and aesthetic and minimalist design.

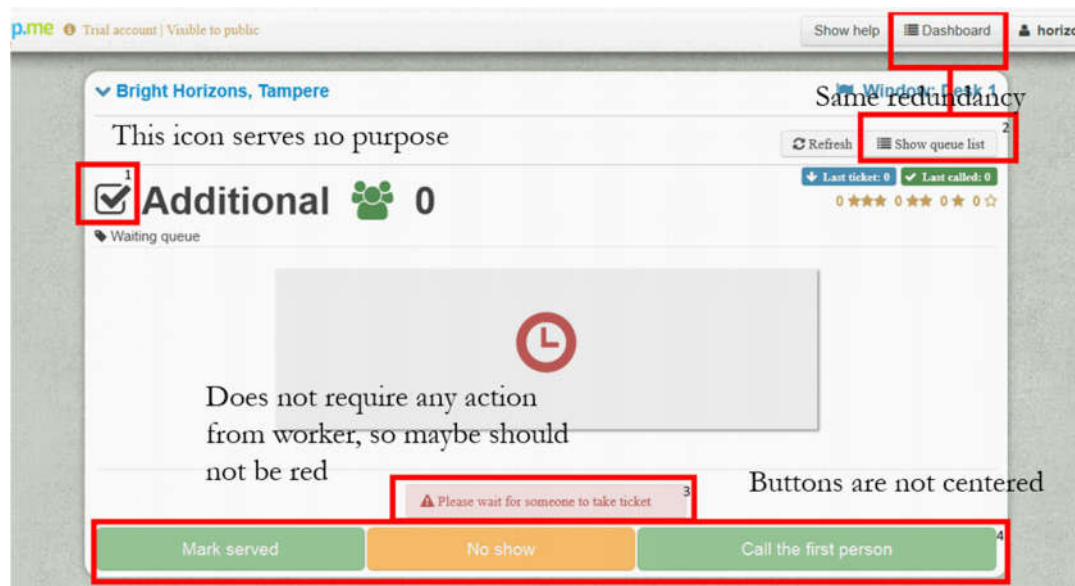


Figure 6: Queue management detailed view

During the test two users experienced error messages, which were unclear and were written using technical terms. According to the theory of usability, this should not happen, as users must always know why a specific action could not be completed and understand what actions they can take to correct this. The screenshot below shows an error message, when a queue could not be deleted, because there were active tickets present. One volunteer also faced “Office not defined: invalid access to interface” error and did not understand what this meant. Error messages should be clear and consistent and users should have control of the situation.

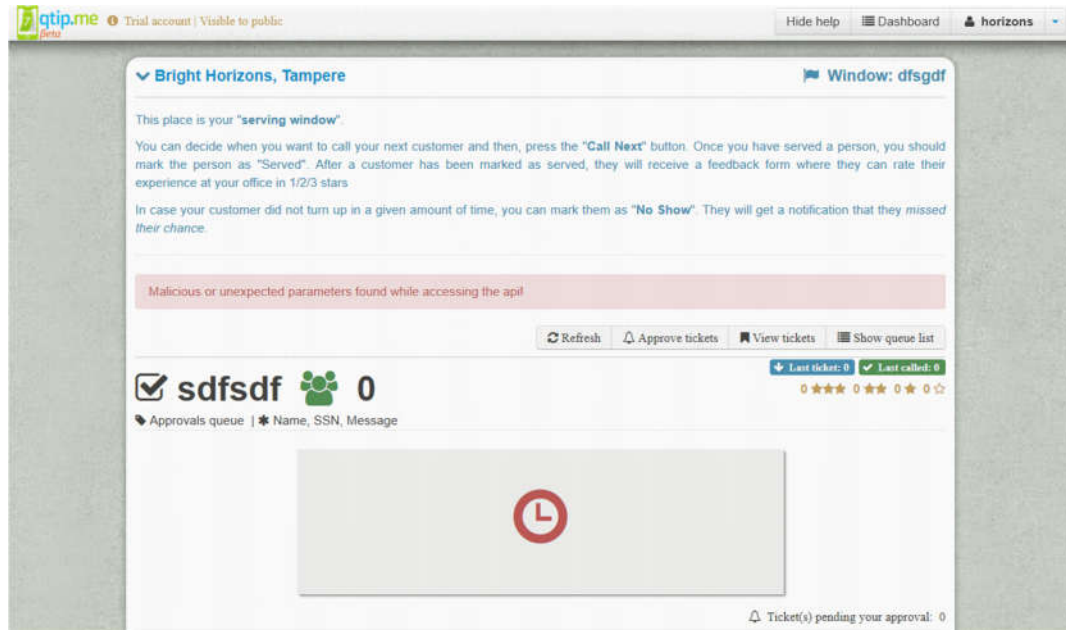


Figure 7: Error message

Other user errors made while working on task 2 revealed problems with visibility of important buttons for settings and existence of redundant menu elements. The button for settings was very small and difficult to notice, while an option to switch language was located very far away from the main menu and on high resolutions was out of a user's view. Having such usability problems may result in increased error rate among the users not familiar with the interface.



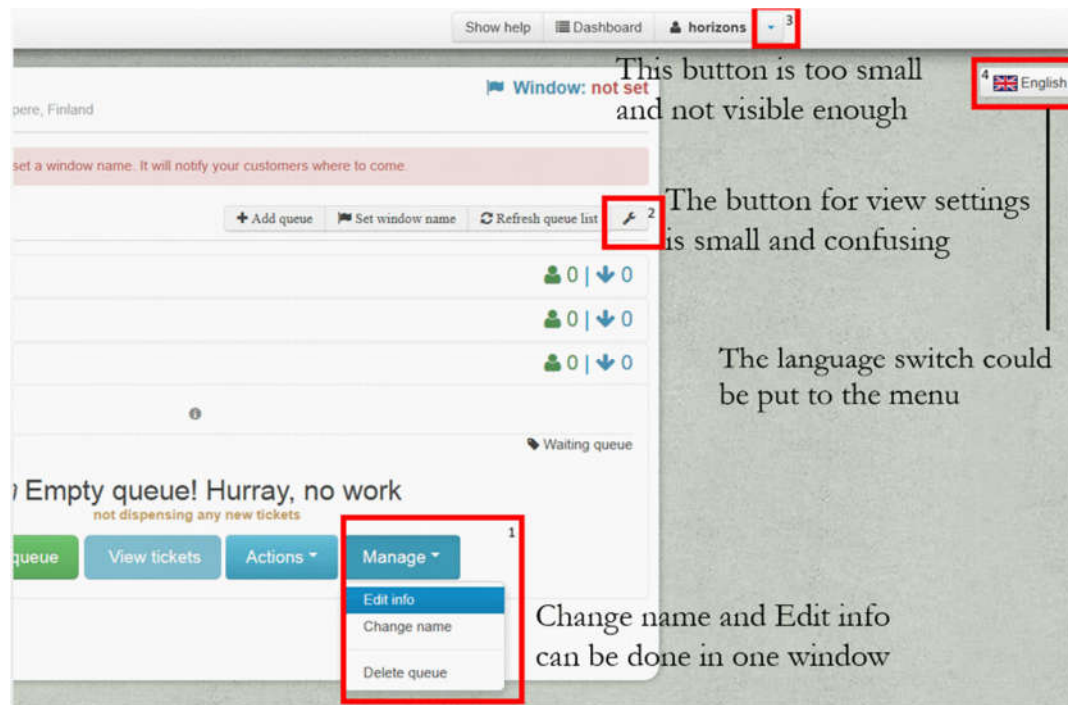


Figure 8: Buttons in the main window

## 5.2 Likes, dislikes, participants' suggestions

Upon completion of all the tasks, participants provided feedback for what they liked most and least about the website, and recommendations for improving the website. In general, the impression of the website was positive. The majority of participants (80%) felt they would be able to use the site frequently, if they were office workers. Half of the participants agreed that the website was easy to use, though some of the users (20%) believed that there was too much inconsistency in the system. Only 50% felt confident, when using the website, while most of the respondents (70%) said that the various functions of the website were well integrated. Nobody said that the website was cumbersome to use. However, the test users said they would like to see the top navigation menu redesigned (Table 5).

### 5.2.1 Liked most

The following comments capture what the participants liked most:

- The color scheme of the website was found to be rather nice and pleasing to the eye;
- The system provides an overview of multiple queues at once;
- Icons help to focus attention on certain important areas of the page;
- The way action confirmation dialogues are implemented allows to avoid unintentionally making a wrong action.

### 5.2.2 Liked least

The following comments capture what the participants liked the least:

- Overabundance of action completion/confirmation dialogs, as well as successful action notifications was found to be unnecessary and annoying by most of the users;
- Small size of buttons in some cases, such as information and icons to be shown next to the queue or account settings and billing button;
- Improper scaling of the website to the display resolution: the white frame does not look good on big screen resolutions;
- “Show help” button is not needed, when it cannot be clicked;
- The site should remember the window name set last time: it should not ask for a new window name each time you log in.

### 5.2.3 Participants’ suggestions

The following comments represent what the participants themselves felt would improve the functionality of the website:

- Real time refresh of the queue list without reloading each time;
- Get rid of the existing redundancy (show queue list, dashboard);
- Change the icon for view settings;
- Action completion/confirmation dialogues should be made in small JavaScript notification windows and after successful action fade away without any additional clicks;
- Option to switch off action completion and confirmation dialogues;
- Use one font for all the text on the site;
- Make “Serve queue” button visible all the time: it should not disappear after the page refreshes;
- Make the English/Finnish switch button visible on the main menu bar: there is no need to make drop-down menu, but just switch from English to Finnish and from Finnish to English.

More recommendations are presented below.

## 5.3 Recommendations

The recommendations section provides recommended changes and justifications driven by the participants’ task completion success rate, behaviours, and comments. Each recommendation includes a severity rating, which indicates how urgently the issue should be fixed and which changes should be made first. The following recommendations should improve the overall

ease of use and address the areas where participants experienced problems or found the interface unclear. The task column is given here to show, where the usability testers faced problems.

Task	Suggested change	Justification	Severity
Logging in to the website	Enable logging in by pressing the Enter key	60% of the participants found the inability to do so annoying	medium
1. Set a window name to "Desk 1" to let customers know where to come	Place the button closer to the window name  Consider changing the name to "Set desk name"	70% of the participants said it was not clear what "Set window name" button would do. Most initially thought that it had to do something with the browser window.	low
2. Add a queue called "Consulting services"	Specify whether adding info about the queue from the start is mandatory or not  Create queues closed by default without the need to be activated	90% of the participants were not sure whether they are supposed to fill this field or not  The term "activation" can confuse users. It would be simpler from the user experience point of view to press the button "Open" after creating a queue rather than "Activate"	low
4. Close the queue for new tickets	Rename the "Actions" button to "Open/Close"	80% of the participants initially could not tell the difference between the functionality "Actions" and "Manage" buttons. Since the only function of "Actions" is closing or opening the queue, it should have a more clear name	low
5. Change the description of the queue to "Help with organizational issues"	Make the function of changing the info (description) more visible  Allow to type and edit the description, when it is being clicked on	When the info (description) of the queue needs to be changed, the user should be able just to click on it and start typing without having to click additional buttons hidden behind other buttons	low
6. Modify the view of the site to display "Last ticket dispensed" counter	Change the "last ticket dispensed" icon  Provide a name for the "wrench" icon or add a tooltip, explaining what it is used for	90% of the participants have stated that the "Wrench" icon for "Queue view settings" is misleading and not self-explanatory	medium

Task	Suggested change	Justification	Severity
7. Refresh the queue list	Enable real time refresh without collapsing queue windows	80% of the participants stated that refresh feature should not collapse the opened windows	high
8. Press "Serve queue" button of "Consulting services" queue, then go back to the dashboard	Get rid of existing redundancy  Open the queue the person is working with after returning to dashboard	40% of the participants have noticed that after they press "Serve queue" button, the dashboard and queue list buttons both take them to the same page  60% of the participants have stated that after returning to the dashboard from the "Serve queue" page, the last queue should be opened automatically	low
9. Find the information about your company's billing and plan details for current month using the website	Make "Account settings" button more visible	Small downwards arrow icon is difficult to find and its meaning is unclear. Billing and statistics for the day is an important feature and should be visible	medium
10. Find daily usage data of the site and tickets	Make the tickets daily data easier to notice  Put a link from Billing plan details in My account section to the Billing page  Consider a possibility of merging Account and Billing pages	70% of the participants had difficulty with finding the daily usage button, because it was in the Current month's section	medium
11. Go to "Update timings" in your account options and set the office to be opened on Saturday from 10:00 till 15:30	Make it possible to edit information directly in the table  Use checkboxes instead of "Open/close"  Make it possible to add exceptions for holidays  Get rid of redirecting users to "Done!" page after each successful update  Open the day for work automatically, when time is changed for it	The participants were unable to instantly see an updated timetable, as the message "Done! Successfully updated time for your office" was displayed and wouldn't disappear even after clicking on other tabs and back. Refreshing the whole page showed the updated timings.  90% of the users did not mark the day open for work after they updated timings, because they expected it will be opened as they press the "Update" button	high
12. Go back to the main page, close and delete "Consulting services" queue	Make it possible to delete the active queue without having to close it, if it is empty	When the queue is empty, there is no need to make the user go back and	medium

Task	Suggested change	Justification	Severity
	Add a "Close queue" button to the screen saying that the queue must be closed before being deleted	deactivate queue manually - it can be deleted instantly.  On the screen suggesting to close the queue first, there should be a link or a button to this action	
13. Create another queue called "Applications" using the advanced mode and requiring message, SSN and name to be stated, then activate it	Get rid of a possible error	An error occurred once, while a participant was performing the task using advanced mode: "Office not defined: invalid access to interface"	high

Table 3: Recommendations

## 6 Prototypes

In order to possibly improve the existing design of Qtip.me website, two design prototypes were developed using web tools from mockflow.com and graphics editors. Their purpose was to provide the company with more effective solution taking into the account the existing UI design flaws found during the usability test and the recommendations from the previous chapter. These prototypes represent how the main pages of the website could look to comply with usability principles and provide a better user experience.

### 6.1 Prototype 1

Prototype 1 presents the user with all the necessary tools to manage queues. All relevant and essential information is displayed on the screen using icons and info messages. This eliminates the need for the user to navigate any additional menus. A bright colour scheme contributes to minimization of errors and easy differentiation of queue status.

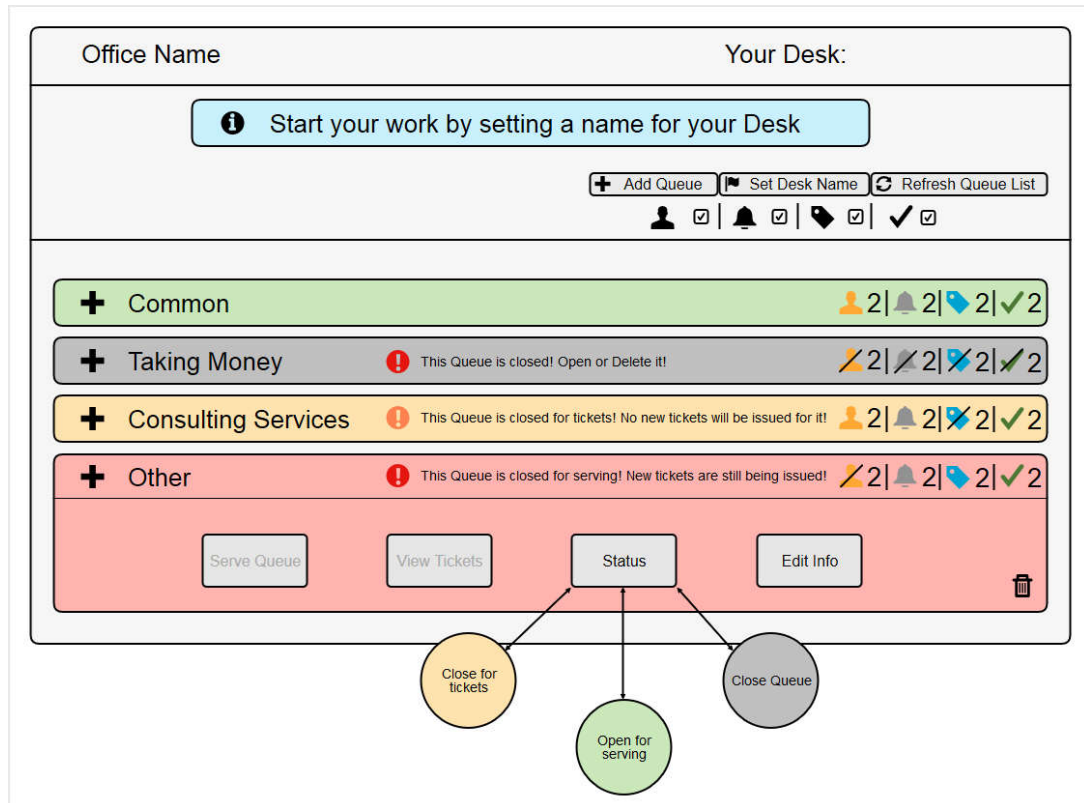


Figure 9: Prototype 1, main page / dashboard

Selecting the queue is done by simply clicking on it. This widens its "interaction area" and brings up all necessary buttons for its management:

1. Serve Queue - sends the signal for the next customer in line; grayed out when the queue is closed for serving;
2. View Tickets - brings up information on how many tickets have been served and how many more are still pending;
3. Status - brings up options to change the status of the queue; rest of the screen should be greyed out when this option is selected;
4. Edit Info - brings up the text field with information about the queue for the customer, allowing him or her to verify that this is the queue they need (before taking the ticket).

## Add a Queue to your Desk

Name your Queue:
☒ Create a Closed Queue; Open when ready

Additional information about the Queue:
☒ Display as tooltip when hovering over the Queue

Select a Queue type:

Waiting Queue

Identification type:
☒ Not required
☐ Message
☐ SSN
☐ Phone
☐ Email
☐ Name

Figure 10: Prototype 1, adding queue dialogue

Queue information can be displayed with messages (next to exclamation marks) and/or icons. The Prototype interface allows the user to modify the amount of information they want to see. If they are comfortable with just icons, they could turn off the messages, and vice versa.

All elements of the interface should have short tooltips visible upon hovering over them. Adding queue dialogue provides options to set the correct identification type in a few clicks. It also has checkboxes to configure queue with individual parameters and customize it according to the user's needs.

## 6.2 Prototype 2

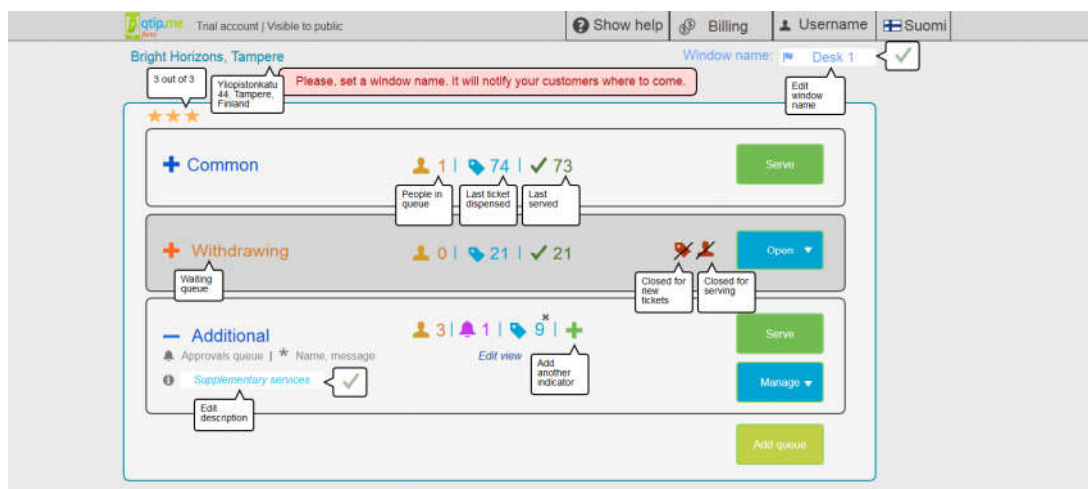


Figure 11: Prototype 2, main page / dashboard

Prototype 2 complies with the principle of aesthetic and minimalistic design. The supplementary information is either deleted or moved to hover tooltips. The top navigation menu is simplified and allows quick access to the billing section, which was difficult to locate before. It also contains an option to switch the language to Finnish in one click. Queue names appear in different colours to inform the user about queue type and attract attention, when necessary. In the middle of each queue tab there is a customizable indicator bar that allows to change the environment according to the user's desires including indicators for last ticket served and dispensed. This allows to move the 'View tickets' button, which previously cluttered the screen on the main page, to the 'Serve' page, while providing the essential information about the last tickets.

The stars indicator at top left provides instant feedback the customer may have left using Qtip.me mobile application. Queue description or window name can be edited without the need to open additional windows directly in a textbox. Checkbox confirmation dialogue is there to protect from unintentional errors. 'Manage' and 'Action' buttons are merged into one 'Manage' button that provides additional options for the open tab. 'Serve' button is made green and is always visible for all open queues, which allows to quickly switch from serving tickets from one queue to another. All the main buttons are placed on the right side for the ease of access. The new 'Add queue' button eliminates the necessity to get redirected to a separate screen, which only had the message that the queue was successfully created, as it was before. Advanced queues requiring certain information from users display a name and a message of the next customer.

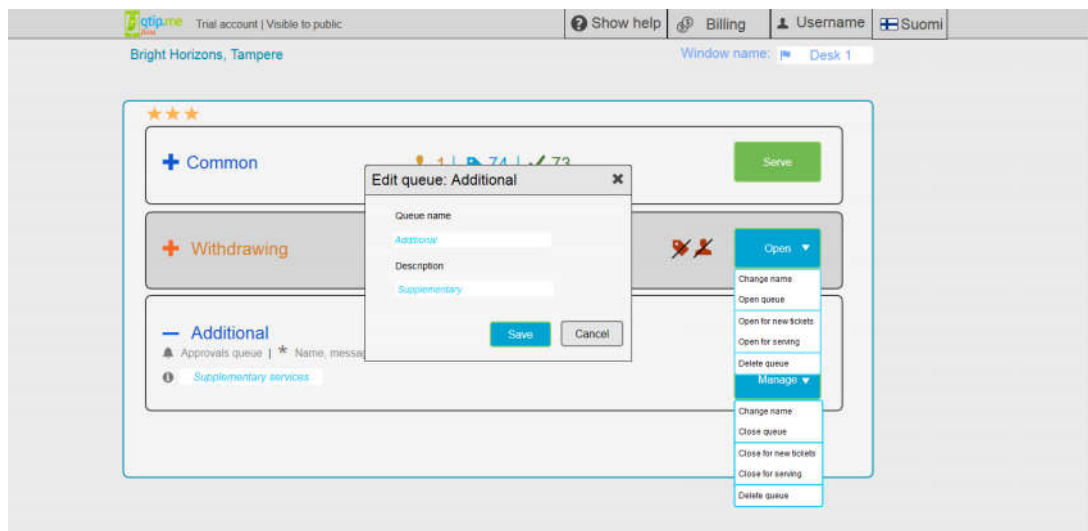


Figure 12: Prototype 2, change table name and info dialogue



Figure 12 demonstrates an elegant solution for the 'Manage' button, which switches its name to 'Open', if the queue is closed, thus providing the user with an option to open the queue in one click. If there is a need to change queue name, then the user can open an additional dialogue and change the description there as well, while continuing monitoring the queue situation. Before the user was redirected to a separated screen, which only had the textbox for a name, and lost visibility of current queue status.

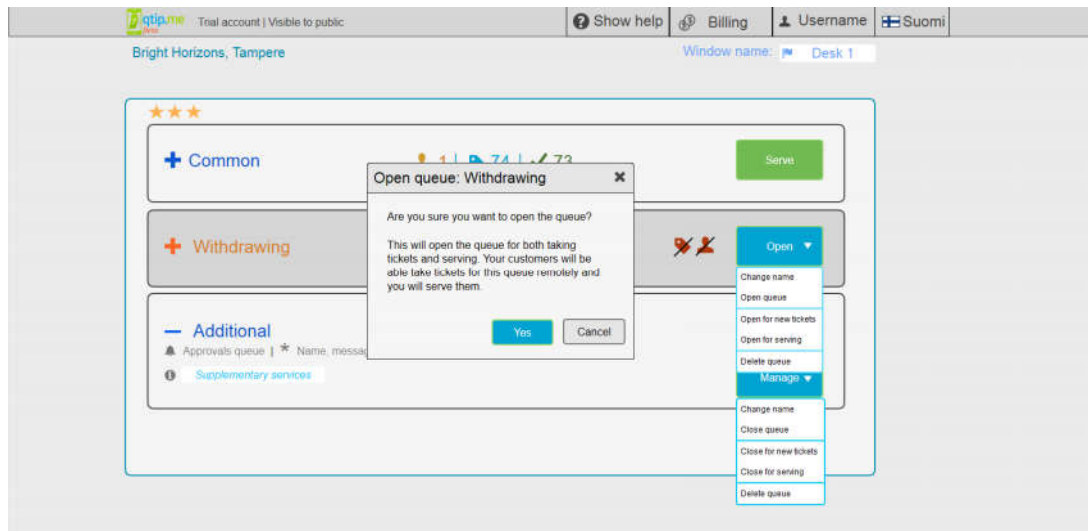


Figure 13: Prototype 2, open queue confirmation dialogue

Open queue is an important action, which requires a confirmation dialogue. In this prototype the dialogue contains additional information that makes the user understand what opening a queue means. During the usability test many users could not understand it themselves and there was no text explaining this.

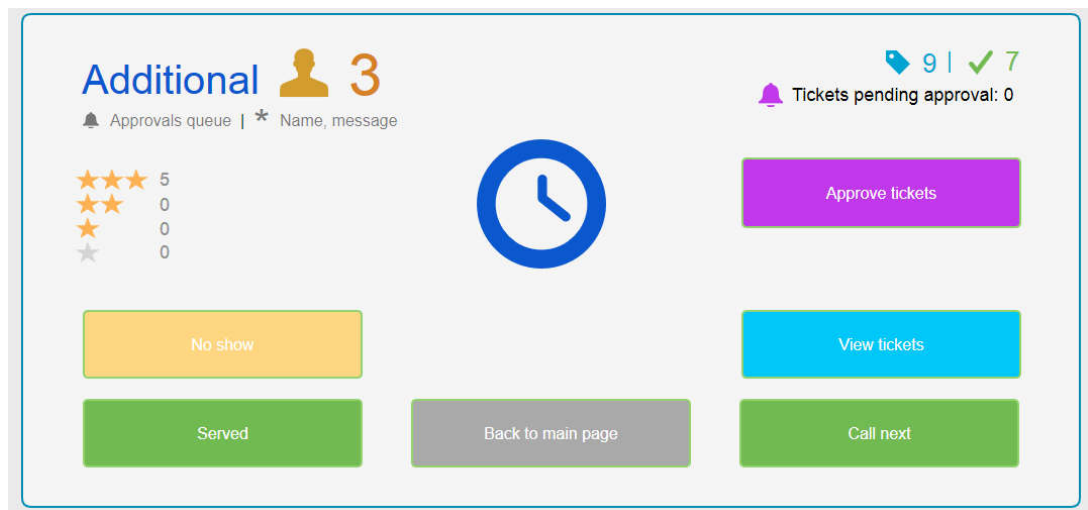


Figure 14: Prototype 2, serve window

Serve window has big colourful buttons to minimize the load on user's memory and eliminate potential errors. The time indicator should show the time spent for one customer, so the office worker would have control of the situation.

The screenshot shows the 'Update timings' page for a user account. The page layout includes a top navigation bar with links for 'Show help', 'Billing', and 'Username'. Below this, the user's account information is displayed, including the name 'Bright Horizons, Tampere' and the window name 'Desk 1'. The main content area is divided into three sections: 'Account' (with links for profile, timings, password, feedback, tickets, display, and keys), 'Operating hours' (a table with columns for Day, Opens at, Closes at, and Working), and 'Holidays' (a calendar for February 2015). The 'Operating hours' table shows that the office is open from 8:00 to 16:30 on weekdays, and the 'Working' column has checkboxes for each day. The 'Holidays' calendar shows that the office is closed on weekends and public holidays.

Day	Opens at	Closes at	Working
Mon	8:00	16:30	<input checked="" type="checkbox"/>
Tue	8:00	16:30	<input checked="" type="checkbox"/>
Wed	8:00	16:30	<input checked="" type="checkbox"/>
Thu	8:00	16:30	<input checked="" type="checkbox"/>
Fri	8:00	16:30	<input checked="" type="checkbox"/>
Sat	8:00	16:30	<input type="checkbox"/>
Sun	8:00	16:30	<input type="checkbox"/>

Timezone: Eastern European Time (EET), GMT+2

Figure 15: Prototype 2, update timings

Update timings now has checkboxes in 'Working' column providing clear information on when the days the office is open. Work days and days off are differentiated by having different colours. Opening and closing time can be input in simple textboxes, when previously users had to pick them from dropdown lists. The page also has a calendar for holidays, which makes it possible to mark office and the queues as closed on certain days.

## 7 Conclusions

The usability test of Qtip.me website for internal use was concluded and resulted in gathering much feedback from the participants. The set goal of evaluating the current design from the usability point of view and suggesting possible improvements was achieved. The results of this study helped to answer the research questions of what the users thought about the website and what they wanted to see changed.

In general, the results of users' satisfaction questionnaire show that the evaluators liked the site and said that given time they would be able to learn all the features and get accustomed to it. The majority of the participants found Qtip.me web frontend for office workers useful and were content with the features it provided. Numerous positive statements were addressed to the chosen colour scheme and advanced options for working with the queues (Appendix 5).

However, the test revealed many problems from the point of view of user-centered design and showed that multiple elements on the website are done in a way that is unintuitive to some people. Many of the problems were common among users indicating that certain changes should be done. The usability principles described in this thesis were only partially followed and required to be paid more attention from the developers.

On condition that the mentioned suggestions will be taken into account, the results of this study can help in the future website development, since they were based on the scientific theory and opinions of real users. Two design prototypes developed specifically for the company's case can serve as a good platform for implementing these recommendations. As the usability test was accomplished during the development stage rather than after the website was released as a final product, this potentially decreased the possible money expenses for making such changes in the future. Continuing to work with users can ensure the website to become more user-centered and easy to use.

The findings of this study may serve as a basis of a further usability research, which may be needed, when the final version of Qtip.me website is released. It may be useful to compare the results of the new usability test with the results of this study to see how the user's suggestions were considered and to what degree the developers managed to follow the usability principles. While this thesis researched the usability issues of the corporate version of a website, another research can be done to study the mobile application of Qtip.me and compare the design solutions between two parts of the system.

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User	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9	Task 10	Task 11	Task 12	Task 13	Task 14	Task 15
1	-	-	✓	-	✓	✓	✓	-	-	✓	-	✓	-	-	✓
2	-	✓	✓	-	✓	✓	✓	-	✓	-	-	✓	✓	✓	✓
3	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	-	✓	✓
4	✓	✓	✓	-	✓	-	✓	✓	✓	-	-	✓	✓	✓	✓
5	✓	✓	✓	✓	✓	-	-	✓	✓	-	✓	-	✓	✓	✓
6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓
7	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
8	-	✓	✓	-	-	-	-	✓	✓	-	-	-	✓	-	✓
9	✓	✓	✓	✓	✓	-	✓	✓	-	-	✓	-	✓	✓	✓
10	✓	✓	✓	-	-	-	✓	-	✓	-	-	✓	✓	-	✓
Success	7	9	10	5	9	5	8	7	8	3	4	7	8	7	10
Completion rates	70%	90%	100%	50%	90%	50%	80%	70%	80%	30%	40%	70%	80%	70%	100%

Table 4: Task completion success rates

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Percent Agree*
I think that I would be able to use this system frequently			2	8		80%
I found the system unnecessarily complex	1	5	3	1		10%
I thought that the system was easy to use		2	3	1	4	50%
I think that I would need the support of a technical person to be able to use this system	6	2	1	1		10%
I found the various functions in this system were well integrated			3	7		70%
I thought there was too much inconsistency in this system	2	5	1	2		20%
I would imagine that most people would learn to use this system very quickly		2	3	1	4	50%
I found the system very cumbersome to use	3	1	6			0%
I felt confident using the system	2	2	1	5		50%
I needed to learn a lot of things before I could get going with this system	2	3	4	1		10%

Table 5: Detailed results of system usability scale (SUS) questionnaire

\*Percent Agree (%) = Agree &amp; Strongly Agree Responses combined

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## Appendix 1: Participant consent form

**Participant Consent Form**

The purpose of this usability study is to explore usability issues and user experience of using backend website of Qtip.me. We are interested in determining if people can accomplish common tasks and easily find information using this website designed for queues management. The session will not test you or your ability, rather the site itself to provide information on areas that might be improved. Your feedback will help us to improve our website [www.qtip.me](http://www.qtip.me). Please be advised that there are no risks associated with participation in this session.

During the testing, you will be asked to complete 15 tasks and fill out a user satisfaction questionnaire. As you complete the tasks, members of the project team will observe and take notes. In addition, the session may be captured on video for future review. Video materials will be used only internally within Codemenders Oy company developing Qtip.me. The testing session will last no longer than one and a half hours.

If for any reason you are uncomfortable during the session and do not want to complete a task, you may say so and we will move on to the next task. In addition, if you do not want to continue, you may end the session and leave at any time.

Approximately 10 people will participate in this study. Results from all sessions will be included in a usability report to be presented to the customer. Your name will not be included in the report.

If you wish to speak with someone about your participation in this study, or if you feel you were not treated as described above, please contact the team representative in person.

I, \_\_\_\_\_, have read and fully understand the extent of the study. My signature below acknowledges my understanding of the information provided in this form and indicates my willingness to participate in this user testing session. I have been given a blank copy of this consent form for my records.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## Appendix 2: Demographic questionnaire results

### Questions:

1. Please, choose your age group
2. Please, rate your computer skills (1-10)
3. Please, write down your occupation

Number	Age Group	Computer Proficiency	Occupation
1	18-25	4	Hotel receptionist
2	26-35	7	Accountant
3	26-35	9	Creative designer
4	36-55	5	Office clerk, insurance
5	36-55	8	Web-designer
6	18-25	8	Student, business management
7	26-35	6	Office clerk, production
8	55+	3	Restaurant owner
9	36-55	7	Chef/cook
10	26-35	8	Software developer

### Appendix 3: Post-session overall usability test completion questionnaire

1. In the past six months, how often did you have to stand in queues in company offices?
2. In the past six months, how much time was the longest time you had to wait in a queue?
3. Do you agree that waiting in queues is an issue that can use improvement?
4. Do you agree or disagree with the following statement: "The site caused me to feel lost and confused."?
5. Were there any tasks that you think were difficult and not obvious for a user to do? What were they?
6. What important features were not given enough attention and difficult to find?
7. What features necessary to manage queues do you think are not present on the website?
8. Was there anything annoying, frustrating or uncomfortable to use on the website? What was it?
9. On the scale from 0 to 10 how satisfied were you with buttons location and colour scheme, when using the website?
10. What did you like about the website, if there was anything?
11. When all suggestions are implemented and changes are done, would you like companies to use queue management system able to issue tickets remotely?
12. How would you evaluate the website in its current state in regards to usability? Rate 0 to 10
13. How many queues do you think you would be able to handle managing at a time?
14. Have you heard about Qtip.me before? If yes, then from where?
15. Do you think the website should be simpler or have more advanced features?

#### Appendix 4: Comments on task performance

##### User 1

1. Confused - What does "window name" mean?
2. Confused - What does "info" mean?
4. Closed the whole queue
8. Confused - Main page / Dashboard
9. Arrow to access "Account/Billing" is too small and the purpose is not clear
11. Failed - Changed the time but did not open the day
13. Slow to find the advanced mode
14. Did not understand the difference between "closing for new tickets" and "closing for serving"

##### User 2

1. Window name too long - Why only 1-10 characters?
4. Difference between "Actions" and "Manage" is unclear
8. Redundancy - "Show queue list" / Dashboard
10. Daily usage button is small and hidden
- quta -> quota mistype
11. Open/close - Better to set open after changing time, open option is unclear

##### User 3

Site authentication - Logging in upon pressing Enter does not work

5. Info -> Description
  7. Operation successful must disappear automatically
  8. Redundancy - "Show queue list" / Dashboard
  10. Daily usage - Trouble with finding
  11. Add exceptions and holidays list
- Opening/closing time - Change to just Edit time, preferably without any lists, but in the window itself
12. Why not delete an empty queue at once, without closing?
- Add link to closing the queue, if there is an error
13. "Office not defined: invalid access to interface" error when using Advanced mode - possibly server side

## User 4

- 4. Confused - Closing for new tickets
  - 6. Confused - Wrench icon is too small and not self-explanatory
  - 10. Trouble finding Daily usage data button
  - 11. Checkbox instead of Open/Close
- Automatic refreshing the page collapses the opened queue windows

## User 5

- 4. Difficult to find "Close queue"
- 6. Last dispensed ticket icon is misleading (downwards arrow)
- 7. Refresh queue list - unnecessary, because queues should refresh real-time or on page re-fresh
- 10. Daily usage data is very small and hidden
- 12. "Close queue" before "Delete" is inconvenient - Why not automate?

## User 6

- Does all the tasks effortlessly
- 11. Said that open/close function is confusing

## User 7

Enter to log in does not work

- 10. Had trouble finding daily usage data. Said it was illogical to put into month's usage data
- 11. Update timings is inconvenient: there is no sense in choosing only opening or closing time in the list

## User 8

- 4. -
- 5. -
- 6. -
- 10. -
- 11. -
- 12. -
- 14. -



Thought that "Change the description" is "change the name of the queue" or make a new queue. Didn't know where to change the description. It's very difficult to find the dashboard and information of billing or plan details.

Didn't delete the queue

Thinks that closing the queue is the same as deleting it.

User 9

6. -

Could not find "last dispensed ticket" on the main page. Located it in the serve window, but could not click it or anything

9. -

Though it would be in account option: found brief billing there, but could not go to Billing page

10. -

Button is small and hard to notice

12. -

Closing the queue before deleting it is unintuitive

User 10

4. -

Closed the queue completely

5. -

Tried to click the description on the main page to change it

6. -

8. -

Did not understand what 'dashboard' means

10. -

Thought it would be in account settings

11. -

Changed time on Sunday instead and did not open after

14. -

Closed the queue completely again

## Appendix 5: Summed up answers to post-session questionnaire

1. In the past six months, how often did you have to stand in queues in company offices?

- answers vary greatly
- from 1-2 time in half a year
- to up to 5 times a month

2. In the past six months, how much time was the longest time you had to wait in a queue?

- answers vary greatly
- from 7 minutes
- up to one hour
- extreme case: 3 hours

3. Do you agree that waiting in queues is an issue that can use improvement?

- all respondents agreed
- some of them very eagerly

4. Do you agree or disagree with the following statement: "The site caused me to feel lost and confused."?

- all respondents disagreed
- some of them experienced difficulties with certain functions of the site

5. Were there any tasks that you think were difficult and not obvious for a user to do? What were they?

- tasks 4, 5, 9 proved to be difficult for some respondents

6. What important features were not given enough attention and difficult to find?

- daily usage of site data and tickets
- some users expressed an opinion that it should be presented in graphs for easier interpretation
- others found all the features adequately implemented

7. What features necessary to manage queues do you think are not present on the website?

- about half of the participants expressed an opinion the current state of available features is enough
- others suggested to show the amount of available tickets, show status of the current time period (is the time available or already reserved), monitoring screen
- add exceptions to working days on "Update timings" page

8. Was there anything annoying, frustrating or uncomfortable to use on the website? What was it?

- some users reported the site not scaling properly to their screen resolutions
- overabundance of confirmation dialogs (i.e. the user created a new queue and the site responds to it by sending a message "you've successfully created a new queue")
- some users found it to be necessary, as it confirmed that they were taking correct actions

9. On the scale from 0 to 10 how satisfied were you with buttons location and colour scheme, when using the website?

- answers varied from 3 to 8, average being 6

10. What did you like about the website, if there was anything?

- most users found the layout of the site to be pleasing to the eye
- action completion confirmation dialogs were found useful by some users
- colour scheme was comfortable
- some users liked the idea itself to be interesting

11. When all suggestions are implemented and changes are done, would you like companies to use queue management system able to issue tickets remotely?

- most users answered 'yes'

12. How would you evaluate the website in its current state in regards to usability? Rate 0 to 10.

- answers varied from 6 to 9, average being 7

13. How many queues do you think you would be able to handle managing at a time?

- answers varied from 2 to 10
- some users specified that this would depend on the company and the expected number of clients

14. Have you heard about Qtip.me before? If yes, then from where?

- most of respondents answered 'no'
- some said they heard of it from friends

15. Do you think the website should be simpler or have more advanced features?

- most users agreed that the site could have some more advanced features but did not specify which ones exactly